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FROM THE EDITOR | JOHN DIX

The UC tide

Many companies haven't bothered to flesh out their unified communications strategies because 1) it can be hard to calculate ROI, and 2) the deployment effort is often daunting given so much custom work is required to piece together the various components that make up an integrated UC system.

The secret to the former, experts say, is to think small and identify one or two measurable targets for a subset of employees. Can you, for example, figure out how to use the tools to improve customer response times?

But there are no simple answers to the questions surrounding deployment. There are many ways to approach the opportunity, lots of competing technologies and loads of legacy investments to accommodate.

Network World recently fielded a study on UC that provides a glimpse into how some buyers are approaching the task. For example, when asked which technology they are using to build out UC, 43% of the 1,105 respondents said they are building from voice/telephone-centric systems. Second most popular was messaging/email at 27%, while 13% were working to UC-enable specific applications. Only 4% are taking a video-centric approach (3% said "other" and 10% said they weren't sure).

Asked whether they are using any cloud resources for the efforts, more than half (51%) said no, they are using private, on-premise UC tools, but 8% are relying on a managed solution (where the customer still owns the infrastructure), while 9% went with a hosted option and 22% are using a hybrid approach (10% said they weren't sure).

Some of the impetus to get going with UC is the bring-your-own-device movement. Asked if the influx of consumer devices was accelerating their UC plans, 20% said yes, significantly. Another 47% said yes, somewhat, while 28% said no (and 5% said they weren't sure).

How about the importance of video in UC? Only 8% said video was critical to their organization's approach to UC, but more than two-thirds said it was very or somewhat important. One-fifth of the group said video was not important.

Given the difficulty of building an ROI case for UC, it isn't surprising that cost/funding topped the list of biggest UC challenges, cited by 54% of the respondents, but many other impediments were also listed: integration with existing infrastructure, 47%; lack of skill sets, 33%; security concerns, 31%; bandwidth limitations, 27%; difficulty extending UC to mobile workers, 24%; and integration issues with consumer devices, 21%.

In the meantime, of course, elements of UC keep creeping into the enterprise, whether there is a sanctioned strategy or not. Bits show up in new application features, in new smartphone functions, and of course, employees can stitch together their own environments using things like Google Voice. Do you wait to see what develops, or do you get out ahead of it and plan accordingly?

John A. Dix

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bits

Wi-Fi in 25% of households worldwide

AS OF THE end of last year, 439 million households around the world had a Wi-Fi-based home network, equivalent to 25% of all households, according to research company Strategy Analytics. South Korea, where broadband networks are almost ubiquitous, had the highest Wi-Fi household penetration in the world, with just over 80%. Other countries with high penetration (more than 70%) include the U.K., France and Germany. In the U.S., 61% of households have Wi-Fi. By 2016, the total worldwide number of Wi-Fi households will have grown to nearly 800 million and penetration rate of 42%, Strategy Analytics predicts. ***tinyurl.com/7qwewet***

Cisco shows Brazil the money

CISCO PLANS to invest close to $550 million in Brazil over the next four years to expand its presence in the country. The monies will be used to open a Cisco center of innovation in Rio de Janeiro, invest in Brazil-focused venture capital, expand local manufacturing, and forge joint development alliances with Brazilian companies. Cisco says it expects the investments to generate about 800 jobs and encourage entrepreneurship. ***tinyurl.com/75qofbz***

Whoops! Check Point lets checkpoint .com expire

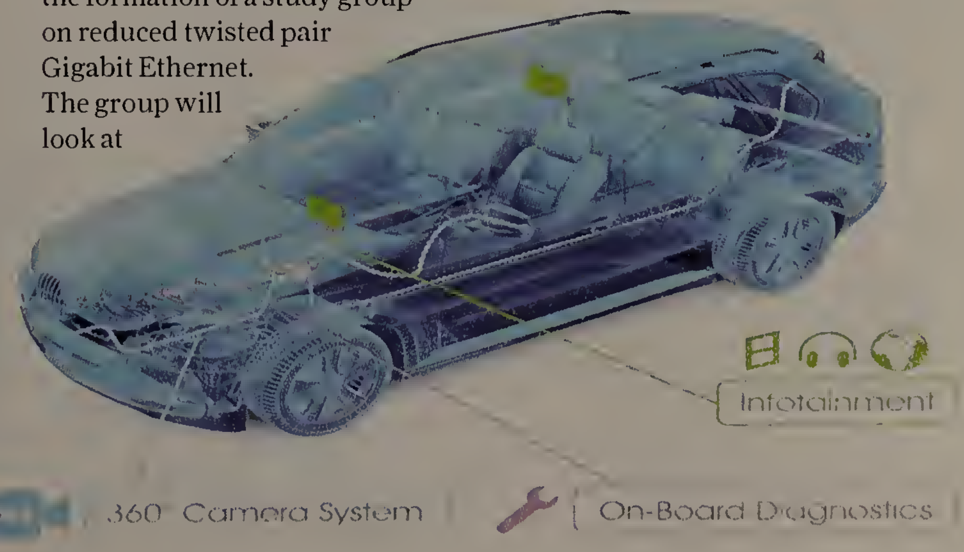
IT'S GOT to be a little embarrassing when a security company that makes its living sweating minute security details overlooks a major item like maintaining the company's domain name, but it happened to Check Point Software. The company's site was down from 8:07 to 8:30 a.m. EDT last Monday because the domain registration expired after domain host Network Solutions sent the renewal notice to the wrong email address at Check Point. Since the expiration caused changes to domain records in DNS servers around the Internet, it took a while for the correct domain to propagate once the error had been corrected, the company said. ***tinyurl.com/cjzxsuf***

Microsoft counted as key Linux contributor

FOR THE first time ever, and probably only temporarily, Microsoft can be counted as a key contributor to Linux. The company, which once portrayed the open-source OS kernel as a form of cancer, has been ranked 17th on a tally of the largest code contributors to Linux The Linux Foundation's Linux Development Report, released last week, summarizes who has contributed to the Linux kernel from versions 2.6.36 to 3.2. The 10 largest contributors listed are familiar names: Red Hat, Intel, Novell, IBM, Texas Instruments, Broadcom, Nokia, Samsung, Oracle and Google. But the appearance of Microsoft is a new one for the list, compiled annually. Overall, Microsoft contributed 688 changes, or about 1% of the accepted changes to the kernel, since version 2.6.36. ***tinyurl.com/74og7yf***

Studying lighter Gig E cable for use in cars

LAST WEEK the Institute of Electrical and Electronics Engineers (IEEE) announced the formation of a study group on reduced twisted pair Gigabit Ethernet. The group will look at whether to develop a standard that would deliver performance as high as the current Gigabit Ethernet over cables with fewer wires inside, a goal considered important for in-car networks. Ethernet is starting to emerge as a key automotive technology as cars are equipped with more entertainment and communication options, plus safety features such as rear-view video cameras. Though cellular and satellite communications are increasingly important to link a car to the world outside, and Bluetooth and Wi-Fi have roles inside, some data transfer in a car still needs to happen over wires. The new study group is scheduled to meet at the IEEE 802.3 Ethernet Interim Session starting May 14 in Minneapolis. ***tinyurl.com/6op9uee***



IT VIDEO

BMW unveils Spyder Concept car

BMW unveiled its flashy i8 Spyder Concept this weekend, making this the third sustainable concept car created by the company. ***tinyurl.com/6uh36j9***

GOOD BAD UGLY

good

Techies get reality show of their own

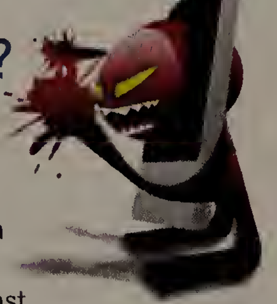
OK, TOUGH call as to whether this new Bravo reality show called "Silicon Valley" falls into the Good, Bad or Ugly category, but we'll give Randi Zuckerberg and crew the benefit of the doubt and hope it puts young entrepreneurs in a good light and encourages others to follow their path. Though come to think of it, that might be pretty dull.

bad

Jobs' Android rage lives on

STEVE JOBS' holy rage against Google's Android mobile operating system was just some "differences" created "for show," according to Google CEO Larry Page in an interview transcript published last week."I think that served their interests," Page tells his interviewer, Brad Stone, of *Bloomberg Businessweek*. "For a lot of companies, it's useful for them to feel like they have an obvious competitor and to rally around that. I personally believe that it's better to shoot higher. You don't want to be looking at your competitors. You want to be looking at what's possible and how to make the world better."

Macs hit by botnets?



ugly

MORE THAN 600,000 Macs have been infected with a new version of the Flashback Trojan horse that's being installed with the help of Java exploits, security researchers from antivirus vendor Doctor Web said last week. Flashback is a family of Mac OS malware that appeared in September 2011. Older Flashback versions relied on social engineering tricks to infect computers, but the latest variants are distributed via Java exploits that don't require user interaction. Apple has released a Java update in order to address a critical vulnerability that's being exploited to infect Mac computers with the Flashback Trojan horse.

Yo Yahoo, where's the strategy?

WHEN YAHOO laid off about 2,000 employees last week, new CEO Scott Thompson failed to address whether this is the first in a series of cuts, what departments will be hardest hit, and if he's working to rebuild the company or preparing it to be sold — leaving employees and industry watchers guessing about his vision for the struggling company's future. Given that little more is coming from Thompson about his plans, Patrick Moorhead, an analyst with Moor Insights & Strategy, said he is inclined to believe Yahoo is being prepared for sale. Dan Olds, an analyst with The Gabriel Consulting Group, says "there isn't anyone out there who will want to buy the company as it currently sits — at least not at anywhere near a price that will make Yahoo investors happy to sell." ***tinyurl.com/ce5yul7***

Dell's acquisition a Wyse one

DELL'S PURCHASE of thin client maker Wyse allows the company to fill a portfolio gap that had been exploited by competitors such as HP, according to industry experts. "It was always a way that HP could maintain a foothold in an account, or as a lead-in to steal business from Dell," says Forrester Research senior analyst David Johnson, adding that the acquisition is "a great move for Dell." Dell's other recent acquisition, SonicWall, could play into the company's newfound strength in the market for thin clients and virtual desktops as well. ***tinyurl.com/cchc6eh***

Study links IT investments to profits

INVESTING IN IT can have a big impact on a firm's profits, more so than similar spending on R&D and some marketing endeavors, according to a team of university researchers. For instance, a company that builds or buys a business intelligence system that helps sell products will see more bottom-line benefits than a company that spends IT dollars to automate internal processes to trim expenses, said the study's lead research author, Sunil Mithas, an associate professor at the University of Maryland. The researchers reached their conclusions after examining the IT investments and financial data of about 450 global companies from 1998 to 2003. ***tinyurl.com/cqns27o***

Contest elicits 20 new Windows security ideas

MICROSOFT RECEIVED 20 submissions in the contest it hopes will result in new security technologies being baked into Windows. The "BlueHat Prize" contest, which debuted in August 2011, offers $200,000 as a first prize, $50,000 for second, and a subscription to Microsoft's developer network for third. It's designed to prod researchers to invent technologies that would protect Windows from entire classes of memory bugs. "Google and others pay for vulnerabilities," said Andrew Storms, director of security operations at nCircle Security. "Microsoft has never done that. Instead they pay for innovation."***tinyurl.com/budz4rj***

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peersay

New programming language a Go

I LOOKED AT and reviewed Go a year or so ago. It's fine, I'm sure, for systems programming, but it's fairly awful for applications programming (console or graphical). Go will have a fairly small footprint in the world because, while all the world depends on system software, most of the world's software is application code (Re: "Google says 'Go' to new programming language"; tinyurl.com/bm7p7hy).

stimpy77

Facebook passwords not fair game

I REALLY LIKE your suggested response: "Is this a test to see if I am willing to follow the company information security policy? I am, so I will not give you my password." This is exactly the right thing to say, and if interviewers press further from there, they look like morons because of their attempt to do what they themselves cannot do as an employee of their company by policy (Re: "Are Facebook passwords fair game for employers?" tinyurl.com/brundku).

That these sort of invasive employment screening processes might be becoming more prevalent points to the level of desperation that out-of-work and under-employed Americans have reached, where they would comply with such practices. It may also reveal the level of contempt and cockiness employers have risen to, given the leverage they wield. Good employers remember that the loyalty, quality and longevity of their employees can be directly related to the level of respect with which they treat their employees throughout their tenures.

Rick762

> The advantage of OSS is that, through review by many, vulnerabilities can be found and fixed.

WHAT WOULD YOU do if they asked to see your medical records or asked for the key to your house so they could look around? The "have you ever been convicted of a felony" is probably the most invasive question that they are (and should be) allowed to ask!

EVVJSK

In defense of OSS libraries

THIS ARTICLE MAKES it sound like open source software (OSS) libraries are especially bad. (To be fair, it does not literally say that, but many readers might infer it, given the headline.) (Re: "Open source code libraries seen as rife with vulnerabilities"; tinyurl.com/ctg59zh)

Yet if you look at the report, you see something quite different. It directly states that, "This paper is not a critique of open source libraries, and we caution against interpreting this analysis as such." Their "experience . . . indicates that the findings are likely to apply to closed-source and commercial libraries as well."

The problem is that software libraries (OSS or not) are not being adequately managed, leading to a number of vulnerabilities. The report recommends that software development organizations inventory, analyze, control and monitor their libraries, and give details on each point.

The advantage of OSS is that, through review by many, vulnerabilities (and other problems) can be found and fixed. The issue this report points out is that if developers won't update the libraries they use, to use these updated libraries, the updates don't help.

David A. Wheeler

Cybercriminals are onto antivirus

ACTUALLY, WHILE ANTIVIRUS is still valuable, it is becoming much less valuable than it was in the past. Most antivirus vendors only detect around 10%- to 30% of some typical botnet payloads. (Or may not detect them for several days.) This is because the criminals create hashed payloads by the thousands and then send them to commercial services like Virtest to ensure that they are not detectable before releasing them (Re: "Mac users 'just as easily duped by cybercriminals' as Windows users"; tinyurl.com/6v3cxx6).

So yes, go ahead and run antivirus, but keep in mind it's a safety net with diminishing returns. The best bet is to keep everything patched, especially Java and Flash, which seem to be easy targets.

Brian

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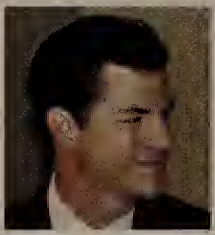
Government IT strains under BYOD challenge

BY ELLEN MESSMER

WASHINGTON, D.C. — IT executives with federal and state governments are struggling to sort out mobile strategies for smartphones and tablets that would be used by employees at work.

The "bring your own device" conundrum was evident in the energetic discussions at the combined Fose/GovSec Conference, where IT professionals from the U.S. Department of Defense, General Services Administration, Department of Agriculture, NASA and the state of Mississippi spoke about the frustrations they have encountered with BYOD.

While the adoption of Apple iOS and Google Android devices, among other mobile platforms, is high, there's the sense that creating custom apps is expensive and that the talent to do it largely lies outside of government. There's also the perception that, given the slow pace of government contracting, Apple's quick device release cycle and Google's ecosphere of Android device manufacturers make decisions on procurement and app investment brutally hard.



> **"... TRYING TO DEVISE A MOBILE-DEVICE STRATEGY IS "LIKE HERDING CATS."**
>
> **CRAIG ORGERON,** CIO FOR THE STATE OF MISSISSIPPI

"We're at the beginning of a mobile apps store," said Craig Orgeron, CIO for the state of Mississippi.

Mississippi tried writing its own apps in-house, but the staff newly hired to do this kept leaving for the private sector, where the talent is in high demand and pays more, Orgeron said. So the state set up a public-private partnership under an entity called Mississippi Interactive LLC. The idea is to gain access to a large library of mobile apps that might be developed by others, which could be shared with other states as well.

Orgeron acknowledged that due to the autonomy granted state agencies, trying to devise a mobile-device strategy is "like herding cats." But BYOD is sweeping through Mississippi government as employees get their way in using their own smartphones and tablets for work. The state took up the topic regarding purchasing in the legislature but "people begged to buy their own," he says.

"It was easier. To be candid, I did the same thing. I could easily have gotten a state-issued device." But Orgeron said he'd rather use his own smartphone because he wants to speak to his family, and state restrictions require phone calls to be strictly for business purposes. Orgeron said Mississippi has now called in the Gartner consultancy to help it sort out security and management issues.

Mississippi isn't the only government entity feeling the tidal pull of BYOD.

Chris Hamm, deputy director of the General Services Administration's Federal Systems Integration and Management Center, which provides services to the government, said GSA is piloting tablets and setting up an apps store in the hopes this could be a resource for the civilian agencies.

Hamm said GSA has already set up some apps via its website for public use that can be downloaded through Apple iTunes or Google Play, and will be expanding that in the coming weeks to other devices. One of the main projects starting at his own office, he said, is use of Android devices. "My office will be an Android-based tablet shop, and one of the first apps will be for time sheets."

There's a BYOD policy for this. "GSA employees with their own tablets can do email and calendar," he said. But the employees have to digitally sign an agreement to allow GSA IT staff to remotely wipe the tablets, and they have to follow GSA-defined password procedures and install a VPN. In his office, Hamm noted, about half the employees so far are electing not to go BYOD simply because they don't want the government to have that power over their personal devices.

In the panel discussion, David Rogers, research associate at the Institute for Simulation and Training, University of Central Florida, which has had grad students designing apps for the Department of Defense (DOD) and others under a special program, pointed out a few things he's noticed in the way that custom apps are built.

Committee-driven requirements tend to create "bloating of features" that software developers are compelled to include in the apps, but which a majority of end users hate. He advocated highly focused "user-driven requirements."

He also noted the main difficulty today in app development is the highly fluid nature of what the mobile OS developers and manufacturers are doing. This is especially true with Android, where fragmentation in manufacturer hardware makes it hard to build an app that will work well across devices. The world of app development today is driven in the commercial sector, where apps are turned out with entrepreneurial zeal and where money is the determinant of success, Rogers pointed out.

"Government contracts don't do that," he noted, adding, "There's needs to be a way to tie the developers' contract with ultimate success of the apps in the enterprise."

There's the classic chicken-and-egg situation where there's not a need for mobile apps until there are mobile devices.

The DOD uses RIM's BlackBerries today, but it's seeking to expand into broad use of Google Android and other devices. The National Security Agency recently published technical specs for what it wants in Android-based smartphones for classified use, which it hopes will influence the private sector. Robert Carey, principal deputy CIO at the DOD, said the DOD has a draft plan in place for mobile but is facing some "security hurdles related to everything except BlackBerry."

There are big plans for mobile smartphones and tablets at the Department of Agriculture. Owen Unangst, associate CIO at the Department of Agriculture, said the agency has 38,000 people working nationwide, usually outside of offices, and mobile tablets present a natural fit for many jobs. Agriculture is seeking to define an in-depth security and management strategy for BYOD that could have the agency supporting 80,000 over-the-air devices a year from now.

This goal has the agency examining some of the more cutting-edge options for mobile apps stores and for security containerization, which seek to cordon off personal and business data on a device.

Agriculture is looking at apps stores and containerization products from Nukona (recently acquired by Symantec) and startup Mocana, as well as from AppCentral and Apperian. Also getting a look for mobile-device management is Good Technology, Afaria from Sybase, MobileIron and AirWatch. The agency has used McAfee's Trust Digital for mobile devices for about two years but may migrate off it, Unangst said. ■

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Dissecting Cisco's FabricPath technology

BY JIM DUFFY

CISCO'S FABRICPATH data center Ethernet technology is designed to combine traditional, Spanning Tree-based Ethernet with a next-generation architecture that uses a link-state protocol to allow for multiple active paths. Deploying multiple active paths in a data center network is required to flatten the infrastructure to reduce latency and better support traffic flow between server racks.

The following attempts to boil down the key aspects of FabricPath on a Cisco Nexus 7000 core data center switch, as described in a Cisco whitepaper.

Use of a link-state protocol: Using or replacing Spanning Tree with a link-state protocol is intended to overcome the limitations of Spanning Tree in data center and cloud environments — chiefly, the inability to use multiple active parallel paths in an Ethernet network. Spanning Tree allows only one path to be active between any two nodes and blocks the rest, which is unsuitable for low latency, Ethernet-based fabrics in data centers and cloud environments.

Virtually every vendor addressing the data center fabric switching market proposes augmenting or replacing Spanning Tree with a link-state protocol, and standards like TRILL and Shortest Path Bridging are being defined to do just that.

Cisco pitches FabricPath as a "superset" of TRILL. FabricPath also uses a Shortest Path First (SPF) routing protocol to determine reachability and path selection in the FabricPath domain. Cisco says its SPF implementation is an industry standard IS-IS routing protocol with FabricPath-specific extensions. FabricPath also employs equal-cost multipath (ECMP) forwarding to make use of all available bandwidth.

Spanning Tree interaction: Even though it replaces Spanning Tree with a link-state protocol, FabricPath can also support and interact with Spanning Tree domains. FabricPath edge switches transmit and process Spanning Tree Bridge Protocol Data Units (BPDU) and participate in building the Spanning Tree forwarding topology in each connected Spanning Tree domain.

But BPDUs and Spanning Tree topology change notifications are not transmitted on FabricPath core ports, and no BPDUs are forwarded or tunneled through the FabricPath domain by default. FabricPath isolates each Spanning Tree domain, and topology changes in one Spanning Tree domain are not propagated to other domains connected to the same FabricPath fabric.

The entire FabricPath domain appears as a single Spanning Tree bridge to any connected Spanning Tree domain because all FabricPath switches share a common FabricPath ID. Each FabricPath edge switch is configured as the root for all Spanning Tree devices connecting to the fabric.

Virtual PortChannel: The foundation of FabricPath's multiple active link capability is Cisco's virtual PortChannel (vPC) technique. The technology lets a single Ethernet device connect simultaneously to two discrete Nexus 7000 switches while treating these parallel connections as a single logical PortChannel interface. The result is active-active forwarding paths and the removal of Spanning Tree blocked links, relegating Spanning Tree's role to preventing creation of a network loop.

But vPC has its own limitations: Although vPC provides active-active forwarding, only two active parallel paths are possible, according to Cisco. And vPC offers no means by which VLANs can be extended, which Cisco says is also a limitation of traditional Spanning Tree designs.

Virtual device contexts: Every FabricPath control-plane protocol and functional block runs in its own protected memory space as individual processes, for stability and fault isolation purposes. Some processes run on the supervisor engine while others run on the individual I/O modules.

Many supervisor engine processes run in protected memory as independent virtual device contexts (VDC). Example VDCs include the SPF protocol; the Dynamic Resource Allocation Protocol for SIDs and forwarding tag values; the IGMP protocol for building multicast forwarding databases; and routing information bases for unicast and multicast Layer 2 forwarding.

I/O modules house MAC and SID tables, unicast and multicast forwarding tables, and MAC address table management. Interfaces to FabricPath can be "Classic Ethernet," Cisco says. But interfaces within FabricPath — core ports — always encapsulate Ethernet frames in a 16-byte FabricPath header and forward based on SID table lookups, not MAC address learning. FabricPath core switches forward frames exclusively on the outer destination address of the FabricPath header.

Conversational MAC learning: Edge switches in Fabric Path do learn MAC addresses but in a way that Cisco says conserves MAC address table space. FabricPath's conversational learning technique defines two types of MAC addresses: local and remote. Local addresses are for a device directly connected to the FabricPath edge switch. Remote addresses are for those devices connected to a different FabricPath switch.

The FabricPath edge switch learns the source MAC address as a local MAC address entry for Ethernet frames received from a directly connected access or trunk port. This behavior is consistent with a Spanning Tree switch, Cisco says.

For unicast frames received with FabricPath encapsulation, the switch learns the source MAC address of the frame as a remote MAC address entry only if the destination MAC address matches an already-learned local MAC address entry — the switch learns remote MAC addresses only if the remote device is having a bidirectional conversation with a locally connected device. Unknown unicast frames being flooded in the FabricPath network do not necessarily trigger learning on edge switches, nor do broadcast frames. But broadcast frames such as ARP messages are used to update any existing source MAC address entries already in the table.

Multicast frames also trigger learning on edge switches, since several LAN protocols rely on source MAC address learning from multicast frames for proper forwarding.

VLAN designations and operation: VLANs can also be configured in Classic Ethernet and FabricPath mode, and conversational learning occurs automatically in VLANs configured for FabricPath mode. When a frame is carried across a FabricPath core port, the frame includes an IEEE 802.1Q tag with the original VLAN ID of the frame. So FabricPath core ports behave like 802.1Q trunks, and the VLAN ID is still used in the FabricPath core to control forwarding and flooding behavior, similar to Classic Ethernet networks, according to Cisco.

Edge ports that bridge FabricPath and Ethernet domains are always FabricPath interfaces belonging to FabricPath VLANs. Cisco FabricPath switches will have the same VLAN IDs as the Classic Ethernet switch connected to it, but with the VLAN mode configured as FabricPath — VLANs configured for Classic Ethernet mode cannot be carried over a FabricPath core port.

As easy as Spanning Tree? Although IS-IS forms the basis of FabricPath, users need not be IS-IS experts, Cisco notes. Users can enable FabricPath interfaces and begin forwarding FabricPath encapsulated frames in much the same way they can activate Spanning Tree and interconnect switches. ■

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LIFE. POWERED.

Carriers make their play in the cloud

BY BRANDON BUTLER

THE WAVE started last year when Time Warner Cable, the telecommunications company serving much of the Eastern United States, spent $230 million to purchase NaviSite, a provider of cloud services for businesses.

Two months later, in April, CenturyLink, the southern telecom, bought Qwest for $12.2 billion worth of stock. That same month, Verizon purchased Terremark, the cloud infrastructure-as-a-service (IaaS) provider. CenturyLink followed by purchasing Savvis, another IaaS provider, for $2.5 billion.

It's been a busy past 18 months for domestic telecommunication companies that have aggressively entered the crowded cloud marketplace. But do they really have a chance of competing against industry leaders?

"[The telecoms'] core business is changing around them, and the cloud is a very natural place for them to go," says Terremark's Chris Drumgoole.

As telecoms iron out their cloud strategy, experts say they need to move quickly. Revenues from their traditional voice offerings are eroding and competitors are moving swiftly to diversify their offerings and attract new customers. Amazon Web Services (AWS), Microsoft Azure and Google have all reduced prices on their cloud offerings in the past month.

Telecoms do offer some advantages — namely, they already have a large nationwide network infrastructure. But some experts believe telecoms don't have a chance to compete against market leaders AWS, IBM and HP, and that telecoms instead need to focus on new value-add services.

The carriers are "gobbling up data centers," which in a sense amounts to a game of catch-up. IaaS competitors already own massive IT infrastructures that telecoms are now trying to build up, says Bob Rosenberg, an independent analyst. But there is one area where telecoms have an edge: "They have the wires," he says.

Armed with their newly acquired data centers, Rosenberg says the natural move is to play up the security and network infrastructure strengths their legacy wired networks inherently bring. From an end user perspective, that appeals to customers looking for low-latency connections for large amounts of data transfer.

One significant differentiator Bryan Doerr, CTO at Savvis, sees as now being part of CenturyLink is security. "It's about more than just hosting now; it's about having a network that can connect these enterprises," he says.

But other analysts say that instead of competing in the IaaS field, telecoms should find their own niche. "Competing on a like-to-like basis on IaaS is not a winning strategy," says Dan Bieler, a telecom industry analyst at Forrester.

Telecoms, he says, have an opportunity to provide value-added services wrapped around their strength, which is connectivity. Bieler believes the best play in the clouds for telecoms is to offer a platform for hosting software programs on their infrastructure. This could include ERP and CRM services, plus additional complimentary services related to connectivity between multiple locations, data transfer security and software management on top of that.

For example, a telecommunications company could offer to host an enterprise's Oracle or SAP offering on its database. "Then, they can create a whole bundle of services around connectivity, application management, up to and including device management as part of a range of offerings," he says. Vendors — the Oracles and SAPs of the world — have an incentive to work with telecom providers because it spreads their products out into the market further, he says. End users don't have to invest in the infrastructure to host the applications on site, and can take advantage of the efficiencies the cloud offers, he says.

On an ever broader scale, telecoms may be able to provide an entire unified communication platform, Bieler suggests. They can offer enterprises an opportunity to purchase communications systems, and use their existing infrastructure to connect a range of devices, from phones to mobile devices and tablets.

Some telecoms have already recognized the opportunity. John Potter, vice president of as-a-service solutions for AT&T's business solutions division, says AT&T wants application developers to write programs that run on AT&T's network.

"There is an opportunity for developers to work with us, on our platform, leveraging out toolsets and capabilities to make a truly robust application," Potter says. AT&T is also making it easier for enterprises and SMBs to connect into the AT&T offerings when it announced that enterprise private clouds running VMware can more easily integrate with the company's public cloud offering.

Drumgoole, the Terremark official, says IaaS is a natural fit for Verizon because Terremark is a strong player in that field. He expects Verizon, CenturyLink, AT&T and others to "opportunistically" look at software as a service and platform as a service.

Bieler says telecoms are in a good position because they are seen as trusted players and have an existing set of customers. "You can't underestimate the soft factors these companies have going for them: integrity, reliability, security," he says. Plus, another underestimated feature of the telecoms, is the massive salesforce they already have to go out and sell these systems. ■

There has been a wave of M&A activity by telecommunications companies during the past 18 months. Here are details from a few of the biggest deals:

BUYER Time Warner Cable
ACQUISITION NaviSite
WHEN February 2011
PRICE $230 million
WHY Time Warner Cable expanded its managed services, cloud computing and hosting services for enterprises with the purchase of NaviSite. Within a year, NaviSite released a cloud-based Desktop as a Service offering.

BUYER CenturyLink
ACQUISITION Qwest and Savvis
WHEN August 2011
PRICE $14 billion of stock and cash
WHY CenturyLink has significantly expanded its data center reach.

BUYER Verizon
ACQUISITION Terremark and CloudSwitch
WHEN April 2011
PRICE $1.4 billion
WHY Verizon immediately became a player in the Infrastructure-as-a-Service market when it purchased public cloud vendor Terremark, which has a worldwide presence of data centers. A few months later, Verizon bought CloudSwitch, a company that specializes in helping enterprises migrate to cloud environments.

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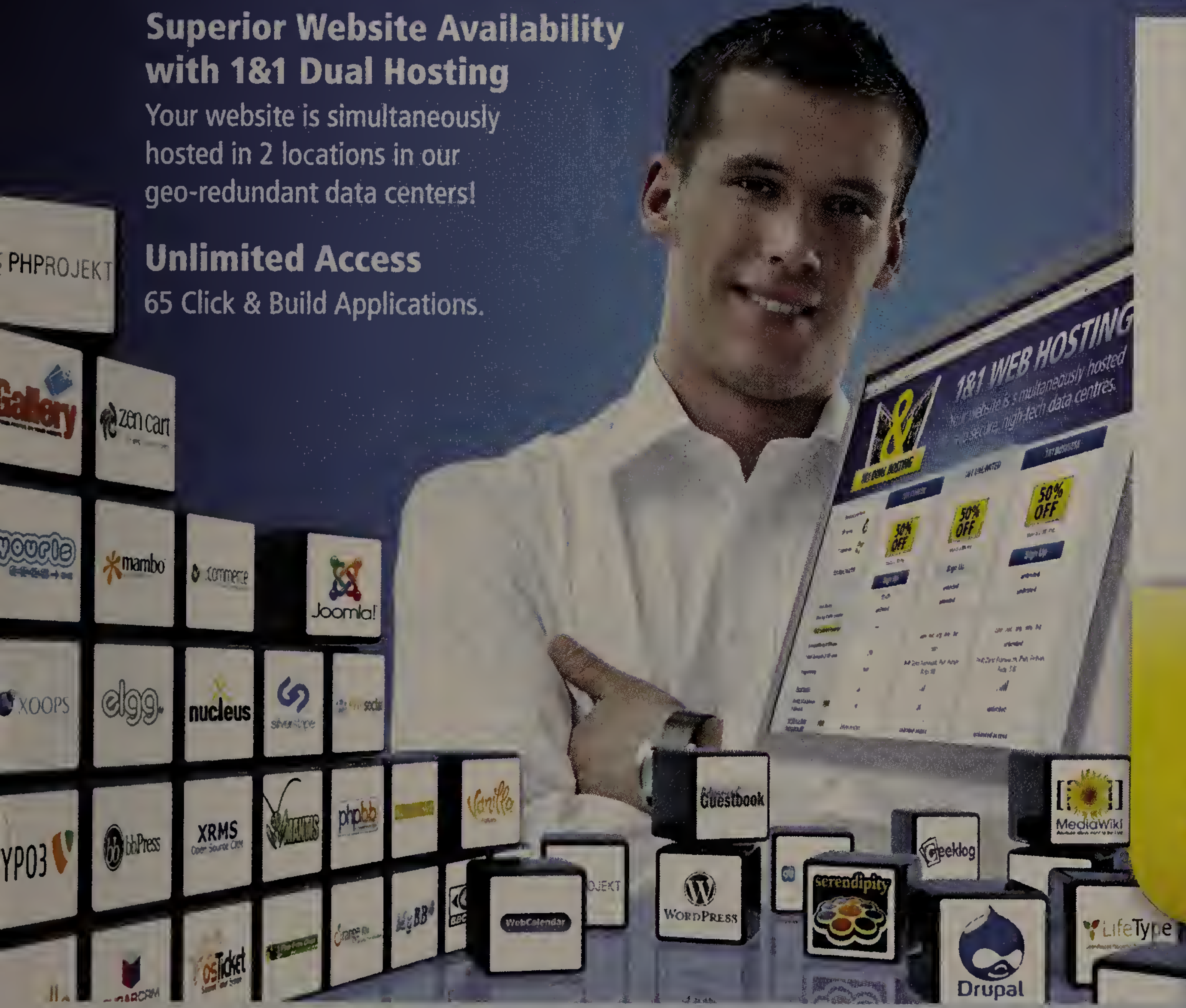

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q&a

IT pro drives a cloud makeover

Mark Adams, vice president of IT at HireRight, is living the dream — the chance to completely rethink the infrastructure for a $300 million software-as-a-service employment screening service company. While the nucleus of the 1,600 employee company has been around for 30-plus years, a three year acquisition spree resulted in data center sprawl, leaving the company with 10 facilities, including company owned and collocation and disaster-recovery sites, some of them overseas. Now HireRight is three quarters of the way through a consolidation effort with a heavy emphasis on cloud. Adams gave an update on the company's modernization progress to *Network World* Editor in Chief John Dix. (See tinyurl.com/ckm8ga2 for a full version of this interview.)

Where did you start with this consolidation effort?

We are a software-as-a-service company and we looked at our 10 data center footprint and asked ourselves "do we really need 10?" So we started thinking about, if we collapse to this, if we refresh that, if we could go with one Tier 1 storage vendor, what did all of that look like? And as we kept going we finally realized that for HireRight four data centers is the best. In this case, more is not more; less is more.

When did you start the process?

Just about two years ago. And it's still ongoing. We have two different kinds of clouds, a customer-facing cloud, which supports the software-as-a-service portals, and an internal back-office cloud for operations. So we looked at what's the next step for that? If we could consolidate everything down and go 100% virtual and introduce some of the flashier elements of virtualization — dynamic processing, being able to move things around, if we could load up our blade servers with lots of memory — what would that footprint look like? And in our case, it got pretty lean, pretty dense.

On the back-office cloud, were you able to accommodate all the assets you came by in the acquisitions?

Yes. That was helped by the fact that a few years ago we went pretty heavily into virtual desktops. One thing that's unique about HireRight is we are a security first company, and then we look at performance and uptime. We are considered a credit reporting agency, so when we built this thing out, VDI got a lot of our attention. You can secure it well and scale it extremely well. So that's what we built our cloud around, keeping the data in one spot, not allowing it to go anywhere.

How do you define cloud?

When we talk about our back-office cloud we're talking about a certain set of tools in the application tier that have to have maximum up time and have to be available from anywhere in the world. So we built a cloud stack around that.

We wanted to be able to expose one interface to our employees and then control the backend horsepower we throw at it and be able to shift that horsepower around depending upon where the work is at any given time.

So being an international company, we didn't want to be limited to having to VPN into one location. We built it around the idea that, anywhere you are, at any time, with your certain set of security protocols, we'll give you access. The data's going to pretty much stay where it is and not leave. So that's our definition of our internal facing cloud. We have accomplished that through a variety of technologies, but it's been scaling quite well. We've put thousands of workers on it.

How hard was it to get right?

HireRight has used Citrix for a lot of years and because of that we knew going in what does and doesn't work. One of the things we don't really care about is the network speed coming in. We've architected the solution to handle up to 300 milliseconds.

But it took a lot of mapping of business functions and groups, putting people into compartmental boxes — these guys should see this slice, these guys should see that slice of applications. So I'd say 50% of it is knowing what people need and getting them correctly allocated, while the other 50% is understanding the limitations of the technology and planning accordingly.

Is part of the goal to reduce the number of components and vendors you're dealing with?

Absolutely. One of the goals was to reduce the cost of administration, and there's not a lot of magic in how you do that. It's simplify, simplify, simplify. If something is complicated, it's going to take a lot of excess work to maintain.

So we looked to take redundancies out of the stack, to narrow it down to a certain set of vendors we felt comfortable with, and we did a lot of bake-offs. Since we are a security first organization, we pretty much encrypt everything. And we have to move large encrypted transactional databases across the wire. So where a lot of the architecture engineering time went was making sure we had that down.

What did you end up with after the simplification effort?

Well, on the server side we started out with the four top-tier vendors and baked it down to one. On the storage side, we had three vendors and baked it down to one. In encryption technology, we really only had three or four vendors we could look at and got that down to one. Load balancers, we had two companies we've worked with over the years and narrowed that to one. Virtualization, we looked at three top-tier ones and narrowed that to one. I have to say virtualization was kind of a horse race, actually. Surprisingly enough, the last time I did this four years ago, it wasn't much of a race, but we had several compelling reasons to go either way with the virtualization vendors.

How about some specifics on suppliers?

For server virtualization we use VMware ESXi. For virtual desktop, which is used on our internal facing cloud, we're using VMware VDI 5.0. And then for the server stack we have a combination of Linux Red Hat

▶ *See* **Adams,** *page 18*

Smarter technology for a Smarter Planet:

Making the fastest people in the city of Madrid 25% faster.

To put emergency responders on the scene as quickly as possible, you need more than fast cars and good radios. You need to orchestrate absolutely everything about the organization, synching not just the people from the different agencies—fire, ambulance, police and traffic agents—but all the processes and technology that serve them as well. The city of Madrid did just that—with help from an IBM business process management solution that integrates the disparate applications, data and processes of its different agencies. Since implementing this solution, the city has reduced Madrid's emergency response time by 25%.

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A data visualization of emergency incidents in Madrid between 2009 and 2010

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Converged infrastructure creates new job roles

BY ANN BEDNARZ

AS THE IT silos come down, tech pros need to beef up their skills to stay relevant and maximize the business benefits of cloud computing, virtualization, unified networking and big data, according to Cisco and EMC, which have teamed to offer training targeted at tech's hottest data center disciplines.

New job roles are emerging as companies adopt converged infrastructures, shift to cloud architectures, and wrangle with massive data stores, and enterprises need to prepare the IT workforce to handle their new roles, the vendors say.

"There's some confusion around cloud, cloud-based services, and how to leverage the cloud as part of an overall organizational transformation. How do you move from classical data centers to virtual data centers to cloud-based data centers?" says Anthony Bryant, director of learning services at Learning@Cisco. "There's also confusion around how to transform the technical talent within this arena."

Unveiled this week, the training initiative from Cisco and EMC also includes resources from VMware. Their joint education bundles provide courseware and certifications related to cloud architecture, virtualization, storage, data center networking and data science. The bundles are organized around specific disciplines and job roles, including cloud architect, systems administrator, backup and recovery, data center network design and data scientist.

"The lines between the traditional silos, or pillars, in IT are starting to blur" in today's IT-as-a-service, cloud-based data center environments, says Alok Shrivastava, senior director of education services at EMC. "They have to, because one group or one function making a decision impacts everybody else," he says. "You might be a system admin or DBA or network admin, and you need to understand what's going on across the different technology areas in the data center."

In the Cisco/EMC/VMware training model, there's a path associated with each discipline that prescribes the required courses to become proficient. For instance, the systems administrator path requires these courses: Cloud Infrastructure and Services, VMware vSphere: Install, Configure, Manage, and Cisco Data Center Unified Computing Implementation (DCUCI). Someone aspiring to be a data center network architect could follow a learning path that includes these courses: EMC Cloud Infrastructure and Services, Cisco Data Center Unified Fabric (DCUFD), and Configuring Cisco Nexus Data Center (CCNDC).

IT pros can opt to purchase courses by the bundle or individually. The training is delivered via instructor-led courses, instructor-led video training, or, in certain cases, on-site instruction at a customer premises.

From the perspective of a CIO of a 1,000-person IT organization, "the success of cloud transformation depends on the team. Beyond the technologies, unless the team has bought into it and has developed new skill sets, the project could very well fail," Shrivastava says. "It becomes extremely critical for CIOs to transform the workforce." ■

Skills gaps drive training investments

U.S. companies' **training budgets climbed 9.5%** to an average of $800 per learner in 2011.

SOURCE: BERSIN & ASSOCIATES

q&a

▶ **Adams,** *from page 16*

and Windows, depending upon the function. We do mostly Oracle, but we do have some Windows SQL databases for reporting.

Are all your desktops virtual or just a subset?

Right now it's a subset. I'd say we're about 55% virtual. We do have whole offices on VDI, though. Our road map is to have pretty much everybody on a virtual solution in the next year and a half to two years. Our work-at-home teams are all on virtual.

Do you still use Citrix?

We previously used Citrix and transitioned over to VMware.

How about on the server side. What did you end up with there?

We are a Cisco UCS shop, but I'll tell you that was a really interesting bake-off. We were an HP shop. We had strong HP loyalty.

What swayed you the other way?

I'd say two things. There's the technology stack. UCS is very dense in terms of memory footprint which helps for virtualization, so we saw a lift from that. But frankly it was the effort Cisco put in. They put a lot of engineering time against it to ask us what our applications did, what kind of CPU power we needed, what kind of memory footprint we had, and took the time to engineer it so we didn't have to overbuy.

Our primary U.S. data center is down in Nashville, and we put a lot of density in there because we realized it's not about the amount of square footage you have, it's how you use the footage. And we asked, how high can we stack? UCS can stack pretty high if you do it correctly, so we can get quite a few blades in each cabinet.

And do I understand you ended up with EMC on the storage side?

Yeah, EMC pairs pretty well with UCS. EMC put in a lot of effort helping us architect the right solution for VDI. With VDI it's not necessarily about how many spindles you have going, it's about how the data is cached in memory. So we did work with EMC, VMware, Cisco, Brocade, all these guys came together because we run a decent-size VMware VDI desktop implementation, so they were very helpful in getting it right. And on top of that, we have encryption engines running across everything, so I'd say from a technology stack infrastructure perspective, it really was that kind of perfect blend of speed, virtualization, high uptime and high density.

So the data centers are finished, but how far along are you in the UCS build-out?

We have a lot of UCS chassis installed. As far as the actual migration, we're about 75% done. So that's why we feel confident at this point that we're seeing the returns that we've spec'd out. It's working quite well, and I'm very pleasantly surprised at just how far we can go. We started this project expecting to go from 10 to six data centers. But as we looked closely at it and at some of the redundancies we could eliminate, it became apparent we could go from 10 to four. We can't go much further below four because we have to keep an international presence and everybody has to have a DR site, so it was kind of the bare minimum.

So, is the cloud service you provide to customers supported by this as well?

Yes, we have similar type of infrastructure but split out into different security zones, etc. A combination of Java and .Net stacks, load balanced and secured. ■

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Five geek projects

At the end of last week I slipped on a wet floor, did a wild, balletic (or so I thought) attempt to recover, and wrenched my knee and leg. The next four days were a blur of X-rays and Vicodin. Luckily nothing broken, but I've had better weekends.

Mark Gibbs' Gearhead

I spent much of Saturday and Sunday browsing the Web and adding to my growing list of "Stuff I Must Write About." As an experiment, this week I'm going to give you a tasting menu of products and services you really should check out ...

1. Shapeoko

This is a low-cost Computer Numerical Control (CNC) machine for milling all kinds of materials, including plastics, woods, metals, and maybe even chocolate. The Shapeoko is available as a DIY, open source tool that can mill objects up to 7.87 inches along both X and Y axes, and 3.5 inches on the Z axis. You can use software such as Google Sketchup, Autodesk 123D, TinkerCAD, or Inkscape to create your objects. The mechanical parts-only kit is $199, the full kit is $649 and the premium kit, $999. The developers of the product are approaching this as a "jump-start" kind of business and want 150 orders if they are to deliver any units at all. At the time of this writing they have 107 on order with 19 days to go ... I'd be surprised if they don't go to production. I might need one myself ...

2. Arena Partslist

If you have a need to create parts lists for any project, check this service out. It is cheap at $9 per user per month but free for personal use (for example, for your open source 3D fab projects). This is a slick, polished system that makes creating and managing a bill of materials extremely easy. Rating: 5 out of 5.

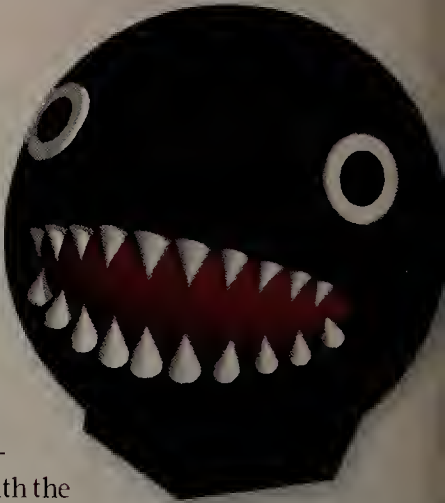
3. MongoDB

This NoSQL, free, open source database is getting a lot of attention these days. Why? My theory is based on Darwinian evolution ... "looser" standards (in biology, less specialized genotypes) have a better chance of fitting a "natural" niche environment for success at survival (the dimensions of a "natural" niche aren't, in reality, so overly restrictive as to be unsurvivable for a reasonable number of individual implementations to flourish). As a friend of mine, John Hoebing, noted, "[MongoDB's] table/row/column replacement of collection/document/field is so much looser than [SQL]. Mongo [claims] that horizontal scalability is the killer app, but I'm guessing it's more the relaxed structure. Still, I am impressed, and am going to use [MongoDB] for my next db. Who doesn't need less structure?"

4. Disk Doctor

So, is your OS X system running out of disk space? You've just installed an app or you started a new video project and you've got a warning that your startup disk is running out of space? Try Disk Doctor. It will scan your drive and examine your application caches, logs, extra languages (which can chew up a lot of space), your trash can, as well as your file and email downloads (the latter two items are usually minimal overheads) and at the click of a button, remove them. For $1.99 this utility is great value. Rating: 5 out of 5.

5. TinkerCAD



While I'm at it, check out TinkerCAD ... this is an impressive online service (written in JavaScript for HTML5 compatible browsers with the WebGL library) that lets you create simple 3D objects and then print them using one of a number of fabricating services such as Shapeways. Rating: 5 out of 5.

Gibbs has a potpourri of products in Ventura, Calif. Your collection of delights to gearhead@gibbs.com and follow him on Twitter (@quistuipater) and on Facebook (quistuipater).

ONLINE See the Web pages for all of these products at **tinyurl.com/c8vjsx**

EXECUTIVE VIEWPOINT

The CIO's View: Delivering Time to Value Through Automation

In August 2011, Benny Kirsh was named VP and CIO at Infoblox, an industry-leading developer of network infrastructure automation and control solutions. With more than 25 years of experience, Kirsh is responsible for driving strategic advancements via the company's IT infrastructure and applications. Now more than ever before, IT professionals like him are being asked to deliver strategic value by responding quickly to dramatically changing business demands. But in today's tight economy, they must do so with flat budgets and staffing levels. IDG recently sat down with Kirsh, who explained how corporations can meet those conflicting business imperatives.

Time to Value has become a catchphrase in IT today. What does the term mean to you?
Traditionally, IT has enabled companies to change the way they do business. Investments in IT were high, with cutting costs and a positive ROI as the main objectives. Now, the focus is on getting projects done faster, meaning shortening lead times and responding to changing business needs speedily. With businesses promoting themselves in dynamic ways, IT has to be agile enough to accommodate rapid changes. In the past, a rollout of solutions was a periodic event with long lead times. Today, public and private clouds and the consumerization of IT have changed expectations. So for us CIOs, Time to Value means rolling out systems and new solutions faster with shorter lead times — while remaining focused on cutting costs. As a business partner, IT has to understand the needs of the business and stay ahead of the curve, introducing new technology as needed and being a catalyst for change within the corporation.

> "Automation is key to realizing faster Time to Value."

As a CIO, what are the challenges you face in delivering Time to Value?
The four challenges are quite clear. First, business units' expectations are increasing. During lunch, employees download an app from the cloud for $50, and they are up and running. They expect the same level of responsiveness from IT. Second, technology is becoming more complex, so we must constantly simplify the management of our systems. Third, because of changing business needs, IT is required to do more with less. And finally, we are expected to provide a high level of quality solutions fast enough to support new business initiatives. Balancing all these different drivers requires us to be more creative and innovative.

How is automation beneficial in improving your ability to deliver Time to Value?
Automation speeds up Time to Value. The biggest benefit is to the network. Infoblox's solution successfully reduced the complexity of our network and consolidated all the information gathered from different network devices and different vendors onto one pane of glass for our network engineers to work with. In the past, experienced network engineers had to perform routine, time-consuming maintenance activities, such as upgrades or bug fixing. Increased automation lets us hand these tasks to our junior engineers and/or the IT support group, freeing up senior staff to work on more strategic initiatives. That drives costs down and delivers a better Time to Value.

Please tell us about your experience implementing automation at Infoblox.
By embracing the private cloud for speedy deployment of computer power, we are providing the Engineering department with the capability of self-provisioning virtual servers without IT involvement. Using the private cloud in IT, we recently deployed a new reporting tool that would previously have taken weeks. Now, thanks to virtualization and the automated provisioning of IP addresses provided by the Infoblox solution, it took just days. The move from manual processes to self-provisioning has enabled the IT team to support our organization's changing business requirements. Automation is key to realizing faster Time to Value.

Benny Kirsh
VICE PRESIDENT AND CIO,
INFOBLOX, INC.

Benny Kirsh, vice-president and CIO of Infoblox, previously held several Executive CIO positions and was directly responsible for the successful implementation of major transformation projects. As CIO of The Cooper Companies, he led a team of IT professionals and was responsible for all Global IT strategic planning and execution. Prior to that, he was the first CIO at Kyphon, where he was responsible for building a growth-focused IT foundation.

FOR MORE INFORMATION on leveraging IT automation to gain faster time to value, check out the Webcast **"The CIO's view: Time to Value through Automation"** at www.networkworld.com/webcasts/infobloxvalue

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GADGETS

HP gives scanning a third dimension

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THE SCOOP

TopShot LaserJet Pro M275

by HP, about $350

▶ **What it is:** This multi-function laser printer provides your typical copy, print and scanning functions, but changes the scanner part slightly. Instead of a flatbed for scanning photos and documents, the TopShot comes with an adjustable arm that lifts up and takes a top-down photo of the object with its embedded camera. This method gives you the ability to scan three-dimensional physical objects in addition to flat objects like photos or documents.

The printer includes an Ethernet port and Wi-Fi radio, with full support for HP's ePrint cloud-based printing services, along with a bunch of apps that let you receive printed materials (forms, weather reports, news items).

▶ **Why it's cool:** The 3D scanner aims to replace the traditional method of taking photos of those objects. For departments (or consumers) looking to take photos of products for sale, for example, you would have to take a photo with a regular camera, then transfer the image to a PC, then edit and finally upload into your site or content management system. With the M275, you can scan the object directly into a connected PC, or even scan and send the image directly to an email address (if the printer is network-enabled). I showed this printer to a colleague whose wife sells a lot of bracelets on eBay, and he immediately said, "This would save her a ton of time."

The HP ePrint service gives you a customized email address; you could send anything to that email address and the image would print out (you can customize this email address and change it as well to prevent spammy printouts); ePrint apps for smartphones and tablets let you print images directly to the unit without needing to go through a connected computer.

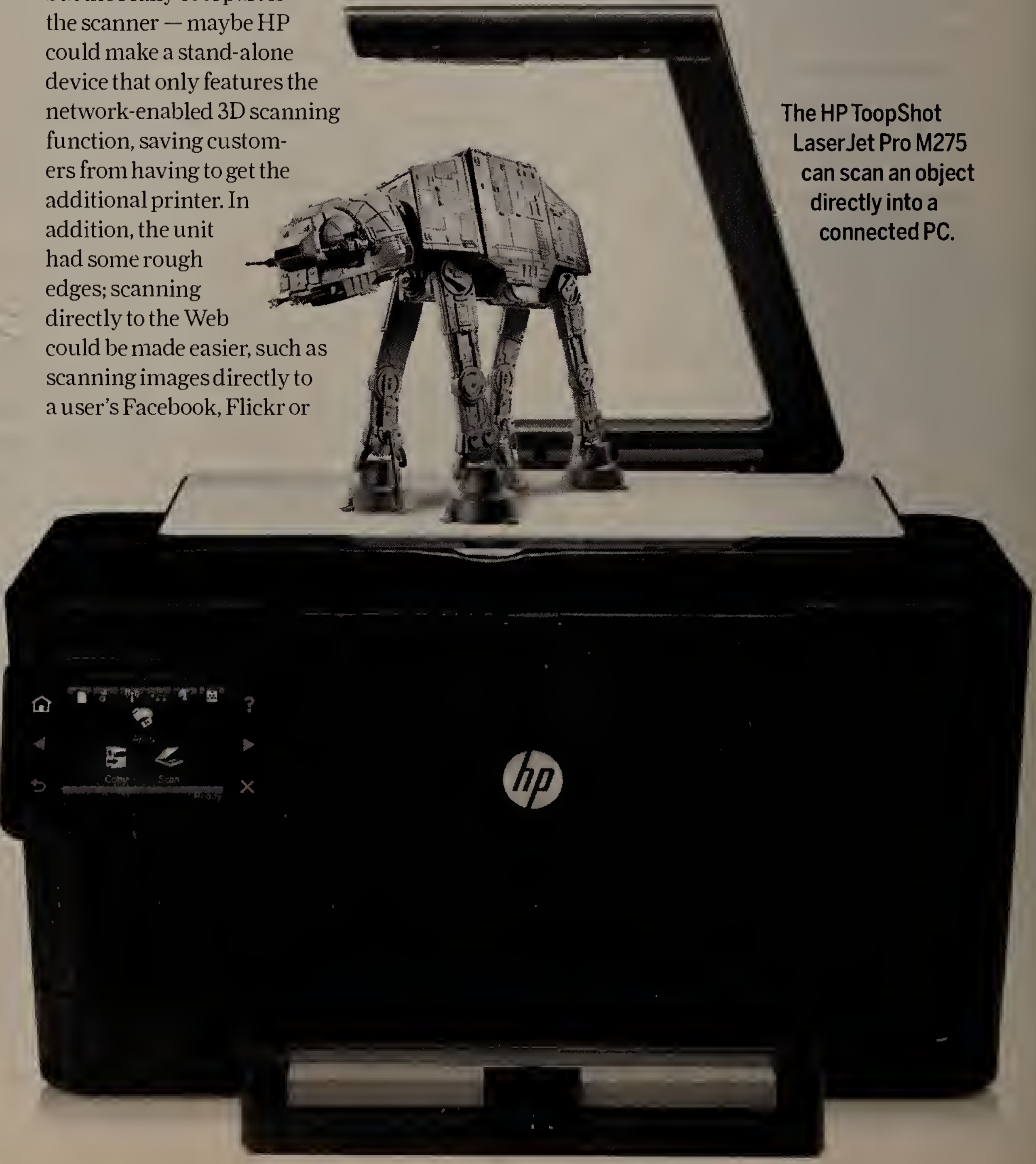
The scanning software on the PC was also nice and easy to use, especially with the ability to remove the background from a scanned image. It was also nice to see that Macintosh systems were supported.

▶ **Some caveats:** The addition of the copy and print functions on the device seem tacked on, as if HP was using this device as a way to sell more printer ink and paper. Fans of multi-function printers will be fine with this, but the really cool part is the scanner — maybe HP could make a stand-alone device that only features the network-enabled 3D scanning function, saving customers from having to get the additional printer. In addition, the unit had some rough edges; scanning directly to the Web could be made easier, such as scanning images directly to a user's Facebook, Flickr or other social media site instead of sending it to an email address. I did see one app that let you scan directly to Google Docs, but you could only scan a PDF, not a .jpg or .png image.

The resolution of the scanner was only 300 dpi, which may turn off users who take high-resolution images with their cameras for the items they're selling.

▶ **Grade ★★★★ (out of five).**

Shaw can be reached at kshaw@nww.com.



The HP ToopShot LaserJet Pro M275 can scan an object directly into a connected PC.

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ECS ISSUE

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ecs

ENTERPRISE
CLOUD
SERVICES

inside

CASE STUDY

No reservations

Preferred Hotel Group gains flexibility with Terremark cloud.

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10 most powerful IaaS players

Page 36

online

See all of our cloud coverage: **TINYURL.COM/7CPOBCY.**

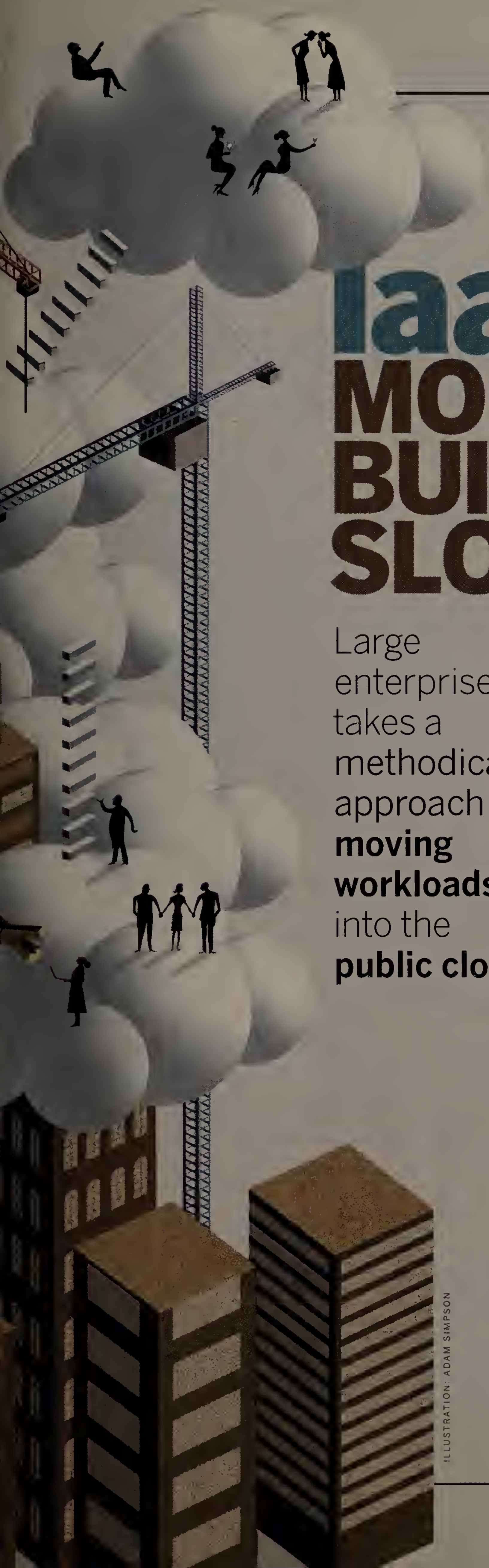

ILLUSTRATION: ADAM SIMPSON

IaaS MOMENTUM BUILDING SLOWLY

Large enterprise takes a methodical approach to **moving workloads** into the **public cloud**

BY CHRISTINE BURNS

When it comes to infrastructure as a service — renting on-demand compute, storage and network resources that live in a multitenant virtualized public cloud — midsize businesses are jumping in with both feet. But large enterprises with their own well-established data centers are still dipping their toes in the water.

The overall usage of public cloud IaaS is certainly on the rise, according to industry analysts. But many large enterprises are moving at a very deliberate pace, one workload at a time.

CIOs ARE NOW TELLING THEIR TEAMS TO GET A PUBLIC CLOUD STRATEGY IN PLACE AND ROLL IT ALL THE WAY DOWN TO THE WORKLOADS WHERE IT MAKES SENSE.”

PAUL BURNS, FOUNDER OF NEOVISE

“Most enterprises we work with are taking a hard look at where cloud fits into their operations. But it’s not about putting one project out there and another one inside,” says Edward Newman, senior director at EMC Consulting. “It’s more about looking at each workload within each application and deciding based on performance, price, functionality and trust level which loads can be deployed in public, multitenant clouds.”

In a survey published in January of more than 600 enterprise and mid-market companies globally, only 27% said they were using public cloud IaaS services. That’s up 10% from a similar survey published in early 2011.

But 28% of respondents said they have no immediate plans to jump into the cloud, and another 24% said they haven’t pulled the trigger on a cloud deployment yet, but plan to at some point in 2012.

Mark Bowker, senior analyst at Enterprise Strategy Group, which published the survey, summarizes the results this way: “Those indicators show there is some good momentum behind widespread business adoption for public cloud infrastructure services, but we are not there yet.”

Bowker adds that he’s generally quite bullish on the prospect of enterprises embracing the public cloud long term.

“Public cloud IaaS is rapidly becoming an accepted technology approach to doing business,” adds Gartner Vice President of Research Lydia Leong. She published a Gartner Magic Quadrant on public cloud IaaS in December 2011 that profiled 20 vendors. Leong identified Amazon, Bluelock, CSC, Savvis and Terremark as market leaders, with Joyent and Rackspace as market visionaries and GoGrid, IBM, NaviSite and OpSource as challengers.

Enterprise deployment trends

While midsize businesses are more willing to outsource IT compute cycles en masse to public cloud IaaS providers, larger organizations are selectively testing the waters, using public IaaS primarily for these specific use cases:

1 || For research and development projects and load testing.

2 || As an opportunity to build and deploy new Web-based applications built to run natively in the cloud that are so compelling to the business that even the most conservative IT folks are willing to accept the perceived security risks, the subpar auditing capabilities and the lack of management tools associated with IaaS.

3 || As a way for IT operations to move noncritical, legacy applications that are not subject to regulatory monitoring off expensive on-premise data center resources.

4 || For specific line-of-business applications where the managers in those units want to act quickly on a new opportunity and don’t want to wait for IT to provision internal resources.

5 || As the underlying infrastructure for a software-as-a-service (SaaS) or platform-as-a-service (PaaS) offering being consumed by the enterprise.

Gartner’s Leong says early adopters have been very successful in theses types of selective rollouts over the past two years and are now poised to make public cloud IaaS a more mainstream practice in their companies.

IT gets out ahead

Paul Burns, founder of Neovise LLC, a Fort Collins, Colo.-based research firm specializing in cloud computing, says enterprises are now taking a more strategic planning approach for future use of the public cloud. “Yes, there are still pockets of rogue developers who think they don’t need IT to build and test new virtualized applications, but there is much less of that these days,” Burns says. “CIOs are now telling their teams to get a public cloud strategy in place and roll it all the way down to the workloads where it makes sense. Planning helps contain cloud sprawl.”

IT managers using public cloud IaaS are quick to extol its virtues. They point to the delivered upon promise of instantaneous scaling that both provides elasticity to handle peak workloads and gives IT an overall “can do” image when other departments come to them to explore technology-driven initiatives.

ETS gives cloud high marks

Dan Wakeman is vice president and CIO of Educational Testing Services (ETS) in Princeton, N.J., which currently uses CSC’s CloudCompute in a hybrid deployment where the compute power sitting in the cloud has a secure dedicated tunnel back to ETS’s large Oracle database.

Wakeman says the combination gives

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>
> **DAN WAKEMAN,** EDUCATIONAL TESTING SERVICES

the company the flexible computing power necessary to develop, administer and score more than 50 million tests at 9,000 locations worldwide annually. "When partners come to us with new ideas that might have been put on the back burner due to lack of IT staff time and resources before we were using the cloud, now we can take them on," Wakeman says.

IT managers are also able to hold IT staffing levels steady while taking on more internal projects because provisioning servers that used to take days or weeks now takes just hours. "It is indeed slightly cheaper for us from month to month to run our operation in the cloud," says Jonathan Newbury, vice president of e-commerce and technology at Preferred Hotel Group.

The Chicago-based hotel reservation services company has employed Terremark's public cloud offering — called Enterprise Cloud — since late in 2008. "But the real cost benefits come when you look at the huge number of new projects we've been able to take on without adding any new IT staff because they are no longer running to the colo to manage the servers," Newbury says.

And, the pay-as-you-go billing allows them to shift from sunk capital costs to operational costs that can be directly tied to revenue streams. "What IT department doesn't want that direct justification?" Wakeman says.

Experts recommend buying a hybrid

The analysts and practitioners interviewed for this article all predict that the majority of public cloud IaaS usage in the enterprise will encompass hybrid installations that also pull together on-premise machines, traditional hosting services and private cloud virtualized services.

The good news is that the growing number of cloud service providers gives enterprise customers a wide range of choices on how they want to implement a hybrid cloud, says IDC analyst Melanie Posey. "They can go with a single provider to get all the services needed or they can pick best-of-breed hosting and best-of-breed virtualized services."

However, there are competing notions of what a hybrid deployment comprises. In one scenario, hybrid cloud means splitting a single application's workloads between public cloud computing power and a highly protected premise resource, such as a large database. The second involves an organization selecting different IaaS products for different workloads and requiring that they all be managed uniformly.

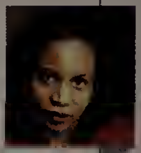
It's the management of either flavor of these hybrid environments that is going to be a point upon which vendors can differentiate themselves, says Kacy Clarke, principal architect with the consultancy Cloud Technology Partners.

The usability of exposed APIs that let IT build its own automation tools to spin up servers in the cloud, for example, or the quality of customer management portals varies greatly, contends Amy Larsen DeCarlo, principal analyst for security and data center services at Current Analysis. Going forward, these APIs and management portals are going to need to do role-based management, set up virtual LANs and allow for pre-assessment planning and post-assessment analysis.

Another differentiator for IaaS providers will be how well they can pick up IT business while making their underlying service as open as possible so customers don't feel like they are locked into their particular IaaS scheme, Clarke says.

"Enterprises want portability. They want to be able to move workloads in and out of the cloud and their own networks at different times in the application life cycle," Clarke says. And they want to be able to pull their workloads off the cloud if either technical or economic issues arise, she adds. ■

Burns is a freelance writer and editor who has over 15 years experience covering the networking industry. She can be reached at cburns1227@googlemail.com.



> **MELANIE POSEY,** IDC ANALYST
>
> THEY [ENTERPRISES] CAN GO WITH A SINGLE PROVIDER TO GET ALL THE SERVICES NEEDED
> **OR THEY CAN PICK BEST OF BREED HOSTING AND BEST OF BREED VIRTUALIZED SERVICES."**

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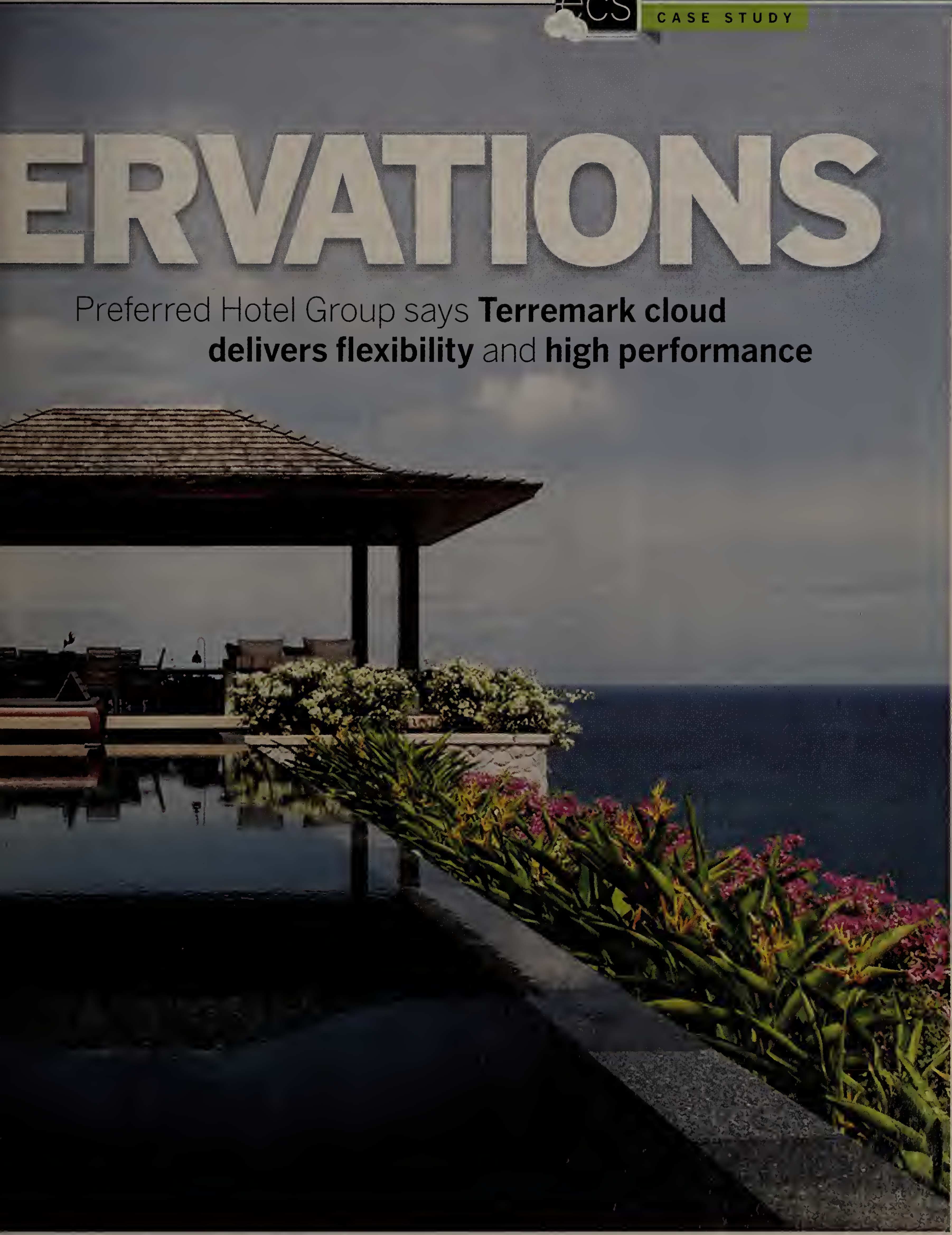
“WE’RE IN THE CLOUD FOR GOOD.”

JONATHAN NEWBURY
VICE PRESIDENT, E-COMMERCE,
PREFERRED HOTEL GROUP

ANDARA RESORT AND VILLAS
Phuket, Thailand

ERVATIONS

Preferred Hotel Group says **Terremark cloud delivers flexibility** and **high performance**



OTO: CHRIS LAKE AT THE TRUMP HOTEL CHICAGO, A PREFERRED HOTEL®

BY CHRISTINE BURNS

IF YOU'VE EVER STAYED AT THE TRUMP INTERNATIONAL HOTEL AND TOWER IN CHICAGO, THE CHANCERY COURT HOTEL IN LONDON OR THE KEIO PLAZA HOTEL IN TOKYO, then the Preferred Hotel Group handled your reservation, delivered technology-driven guest services and took care of a variety of other behind-the-scenes functions.

The Preferred Hotel Group is the technology, sales and marketing backbone for more than 700 of the poshest independent hotels and resorts in 65 countries — specific services include group, corporate and leisure sales; integrated marketing; global connectivity and reservations; electronic distribution services; and tech-based guest services.

The clientele who frequent these hotels expect impeccably smooth services. So when the Preferred Hotels IT team migrated its entire pool of servers from a collocated data center in Chicago, where the company is headquartered, to Terremark's Enterprise Cloud over the Christmas holidays in 2008, everything had to go off without a hitch.

And it did.

"From the end user's point of view, there was no change in service. It was seamless," says Jonathan Newbury, vice president of e-commerce and technology at Preferred Hotel Group. Newbury was the company's vice president of brand development at the time of the migration.

Director of Information Technology Development Charles Zieres, who managed the company's leap into the cloud, had overseen the months of planning and testing prior to the move. He describes the process as "just like transitioning to a new collocation facility, only without the moving vans."

Preferred Hotels initially migrated 25 servers into Terremark's Enterprise Cloud, including its Citrix, SQL and Exchange servers, which were supporting its online reservations system, back-office applications and disaster recovery protocols. The company has since continued to ramp up its cloud presence and is now running the equivalent of more than 50 servers in Terremark's Enterprise Cloud.

The initial attraction

According to Gartner Vice President of Research Lydia Leong, Terremark's Enterprise Cloud is very focused on self-service virtual data center needs, has a broad range of features and boasts one of the longest track records in the enterprise-class public cloud infrastructure-as-a-service (IaaS) market.

Terremark has a bunch of cloud offerings. Terremark Enterprise Cloud is in the top five market-share leaders in the category of VMware-based public IaaS. Then there's Terremark Computing as a Service, which focuses on hybrid cloud deployments. Terremark's vCloud Express is based on Enterprise Cloud and is a pay-by-the-VM offering, but does not guarantee resource allocations.

With Terremark's Enterprise Cloud, services are sold in blocks of computing capacity and billed by processor megahertz, with allowances for RAM and storage. And that flexibility was an initial big draw for Preferred Hotels.

Compared to other public cloud offerings that only let you spin up standard VM instances, this model is more in line with how Preferred Hotels prefers to run its operations. "We don't have one type of machine that gets fired up for every application. Some need four processors, some need 16. Some have tiny footprints like our SVN server, while other like our reporting servers have massive requirements," says Zieres.

The management software that helps customers drive their cloud implementations is called DigitalOps. It allows Enterprise Cloud customers to control virtual machines in Terremark's data center through a portal.

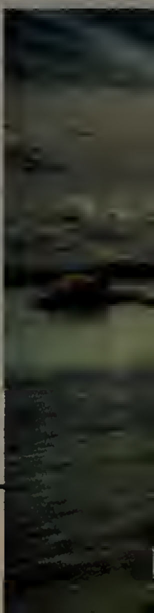
Newbury says having Terremark handle the hassles of the physical servers — and assume the capital costs of doing so — means his IT team is freed up to take on more strategic projects. "We've now more than doubled our infrastructure and our storage capacity in the cloud, but we've not had to increase staff to support that huge growth."

Being in the public cloud has also helped facilitate some of the more mundane parts of running an IT department, like upgrading legacy Windows systems. Since moving to the cloud, the company has upgraded all of its servers from Windows Server 2000 to Windows Server 2008.

That process was expedited by the fact that in 2009 Zieres' team could spin up new Windows 2008 machines, while keeping the old Windows 2000 servers functional during the migration in case there were issues with application dependencies that could disrupt service to the company's 220 end users worldwide.

Last year the company also used the same process to upgrade users from Office 2003 to Office 2010. "That kind of flexible scalability is really invaluable," says Zieres, and it dramatically cuts down on overall application downtime.

Newbury points out that despite industrywide fears about uptime in the cloud, Preferred has actually seen a significant improvement in system uptime. There have only been two outages



in the Terremark Cloud since Preferred Hotels signed on; one was in February and lasted about 90 minutes. "We were experiencing more along the lines of one-hour downtime per month when we had a physical data center, so one outage every 18 months is quite acceptable to us," Newbury says.

Last year, Preferred Systems re-signed with Terremark for another three years of cloud services and is steadily making its way through a list of upgrading legacy systems one by one. Sometimes that will mean migrating some applications off the Terremark cloud, explains Newbury. As part of the company's business continuity plan, Preferred wants to make sure all of its data is not stored in one place.

To that end, the company in the next few months plans to move from an outdated Mimosa Systems email archiving system and the 6 terabytes of email storage — both currently housed by Terremark — over into Google's cloud through the use of its award winning Postini email security and email archiving service.

In terms of new projects, Preferred Hotels has spun up a Microsoft Dynamics CRM application in the cloud and has pulled its previously outsourced website management back under the control of internal IT.

Zieres has also set up a staging area within Enterprise Cloud for the e-commerce development team. "That allows them to stage new capabilities before rolling them out," says Zieres. He describes the new system as far superior to the previous straight-to-production nightmare.

Also on tap for this year in the cloud is deploying a mobile device management application so the company can better control how and when end users can use their own personal devices while working.

And Newbury says the company will bring a Microsoft SharePoint business collaboration system online as well.

"These are all things that we would not have had time to implement without taking the hassles and worries of running a data center out of the picture," Newbury says. "We're in the cloud for good." ■

GAYANA ECO RESORT Kota Kinabalu Park, Malayasia

PHOTO COURTESY PREFERRED HOTEL®

INFRASTRUCTURE AS A SERVICE

CASE STUDY

OpenStack unlocks IaaS

BY CHRISTINE BURNS

INFRASTRUCTURE as a service is gaining traction in the enterprise with customers lauding the flexibility that it delivers. However, there is still that nagging concern about vendor lock-in.

Enter OpenStack: The open source project spearheaded by NASA and Rackspace in 2010 to build a cloud infrastructure platform that can be used by enterprises and service providers alike. The goal is that workloads placed in one cloud can easily run unchanged in another, if it's technologically, politically or financially more attractive to move them.

The project has grown exponentially in the past 18 months. The three core projects are Compute, Object Store and Image Service. OpenStack is officially incubating two more projects that tackle identity services and dashboard and portal capabilities. Additionally, there are another 13 projects being pursued by members that are not officially sanctioned by OpenStack.

The only downsides to OpenStack, says Jonathan Bryce, OpenStack Project Policy Board member and co-founder of Rackspace Cloud, relate to the newness of the project and the fact that it's growing so fast. "It's a lot of work just to keep up with the changes. In the next six months the platform will mature and things will settle down."

The project currently has 2,685 individual members and 159 companies actively participating.

"What started as an effort to leverage the open community to help advance the technologies started by Rackspace and NASA has now turned into a vibrant community advancing IaaS technologies at a rapid pace," James Staten, an analyst with Forrester, wrote in a recent blog post on the topic.

Jeromy Carriere is chief architect with X.commerce, an eBay and PayPal company charged with building a cloud platform to bridge online and offline commerce of eBay and PayPal's participants. It also arms developers and merchants with tools to help sell their goods and services to consumers. The company worked with Rackspace CloudBuilders, a professional services group acquired by the founding hoster, to build the cloud commerce platform in OpenStack cloud.

"There is no fundamental lock-in. We've got a multi-vendor investment plan going forward and we have to have every opportunity to consider all the options in the future," says Carriere, noting that he's been very impressed with the rate of innovation that is happening in this open development process.

CITRIX, KOREA TELECOM, GODADDY, ZYNGA, HP, DELL AND AT&T **ALL HAVE ANNOUNCED PLANS** TO RUN CLOUDS BASED ON OPENSTACK.

While there are no inherent holes in the project that keep him up at night, Carriere does think there needs to be more work done in the areas of automation. And he'd love to see some more tools that help managers "understand and manage the capacity of this highly dynamic beast."

WE ASSEMBLED THIS LIST WITH HELP FROM CLOUD ANALYSTS AT CLOUD TECHNOLOGY PARTNERS, CURRENT ANALYSIS, ENTERPRISE STRATEGY GROUP, GARTNER, IDC AND NEOVISE. ALL WERE ASKED TO NAME THE COMPANIES THEY BELIEVE HAVE THE MOST INFLUENCE — WHETHER THAT'S MEASURED IN MARKET SHARE, MIND SHARE, REVENUE, EXISTING ENTERPRISE PULL OR UNDERLYING TECHNOLOGY LINKS — IN DRAWING ENTERPRISE CUSTOMERS INTO THE REALM OF PUBLIC CLOUD INFRASTRUCTURE. THEY ARE LISTED HERE IN ALPHABETICAL ORDER.

10 MOST POWERFUL IaaS COMPANIES

BY CHRISTINE BURNS

1 || Amazon

AMAZON IS THE STANDARD bearer in the public IaaS space, as its paid-by-the-VM Elastic Compute Cloud (EC2) is both the market share and mind share leader by a fairly big margin. It's got a huge portfolio of services that run atop its Xen-based virtualized infrastructure and Amazon keeps adding to those offerings while it lowers its prices. The company has built a thriving ecosystem of partners around its public cloud, has clamored to get all the necessary security and compliance certifications and offers worldwide data center coverage.

CONTINUED ON PAGE → 38

PHOTO COLLAGE: STEPHEN SAUER

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CONTINUED FROM PAGE 36

2 || Bluelock

AS A SURPRISE PICK AS A market leader in the recently published Gartner Magic Quadrant for public cloud IaaS, this 5-year-old Indianapolis-based cloud provider has been gaining some national name recognition. The company's offering is called Bluelock Virtual Data Center, is based on VMware's vCloud, and can be used to build public, private or hybrid cloud deployments and is driven by a strong portal that includes many tools that allow customers to understand how much and which cloud-based services are costing them the most money.

3 || CSC

CSC IS A TRADITIONAL IT outsourcing vendor that latched onto the cloud two years ago, invested heavily in it, and is now getting significant traction with its VCE (the joint VMware, Cisco and EMC venture) Vblock-based CloudCompute IaaS offering. CloudCompute comes in three flavors: public, multitenant hosted at a CSC site; private, single tenant in a CSC data center; and private, single tenant located at the customer's site. CSC gets points for having a common architecture across all the offerings and for having outlined a clear plan for giving enterprise customers the types of management tools to which they are accustomed.

4 || GoGrid

GOGRID PRIDES ITSELF on being a pure-play cloud company offering both public and private Xen-based IaaS with optional managed services. This small company has had success delivering on that story, placing among the top five public cloud IaaS vendors when you count virtual machines and factor in its very competitive price. GoGrid's effort to build a third-party ecosystem is called GoGrid Exchange, a program that allows partners to sell their software on top of GoGrid server images, thereby easing the issues customers sometime face when trying to deploy applications in the cloud.

5 || IBM

WITH A NEWFOUND devotion to the public cloud, IBM plans to cash in on its existing client base and support about 200 million users by the end of 2012 as clients shift core applications and processes to the company's cloud. IBM has recently made huge investments to the underpinnings of its KVM-virtualized public cloud IaaS, rebranded the service as SmartCloud Enterprise and SmartCloud Enterprise+, and announced plans to tie in more managed services and enterprise features to it this year.

According to an analysis in The Street, IBM offers the broadest range of cloud services, everything from platform as a service, infrastructure as a service and cloud backup services.

7 || Rackspace

RACKSPACE WENT PUBLIC in 2008. Since then, the company has seen a 400% growth in revenue. It beat analysts' estimates across the board in 2011. Net income was up from 2010 by 85% to $25 million and revenue grew 32% to $283.3 million. In particular, revenue for the public cloud business — driven by a Xen-virtualized service called Cloud Servers — was up 86% from the previous year's quarter to $58.5 million. Cloud Servers has been hailed as a very easy-to-use server that comes with exemplary customer service and a low price. Rackspace's direct ties to the OpenStack open source cloud platform project will likely help build its ecosystem further.

6 || OpenStack

OPENSTACK IS AN OPEN source cloud computing platform project started in the summer of 2010 by IaaS vendor Rackspace and NASA. It's got three core component projects up and running, with two more incubating and another 16 coming from the wider community. The draw of an open source platform is that if you use one (either one that you build yourself or one commercialized by an IaaS provider) your applications will not ever be locked to a proprietary vendor. At press time, the project had the backing of 159 companies and 2,685 people actively contributing to the codebase (see story on OpenStack momentum, page 35).

8 || Savvis

SAVVIS — OWNED BY CenturyLink — markets its VMware-driven public cloud IaaS called Symphony Virtual Private Data Center alongside its private cloud offering and with the optional managed services it has already built its enterprise reputation upon. The company offers tiered levels of services, service level agreements and prices to match those levels. The company emphasizes deep security and a unified portal across all of its services. The combination puts Savvis in the top five market share leaders in the VMware public cloud IaaS bucket.

9 || Terremark

TERREMARK — OWNED by Verizon — has three feet in the public cloud IaaS space. The Enterprise Cloud (which is driven by VMware) homes in on virtual data center needs and is sold in blocks of resources as opposed to VM instances. Enterprise Cloud Managed Edition focuses on facilitating hybrid public/private clouds. With vCloud Express — bought by the VM — Terremark is targeting developers who need to test applications they are building for the cloud. Terremark's three-pronged approach has put the company pretty high on the leaderboard.

10 || VMware

FOUR OF THE OTHER NINE companies on our list are betting on their VMware infrastructures to allow them to keep playing in this growing market. We've chosen to include VMware in the list based on the premise that if it sneezes, a big portion of the rest of the public cloud is going to get a cold.

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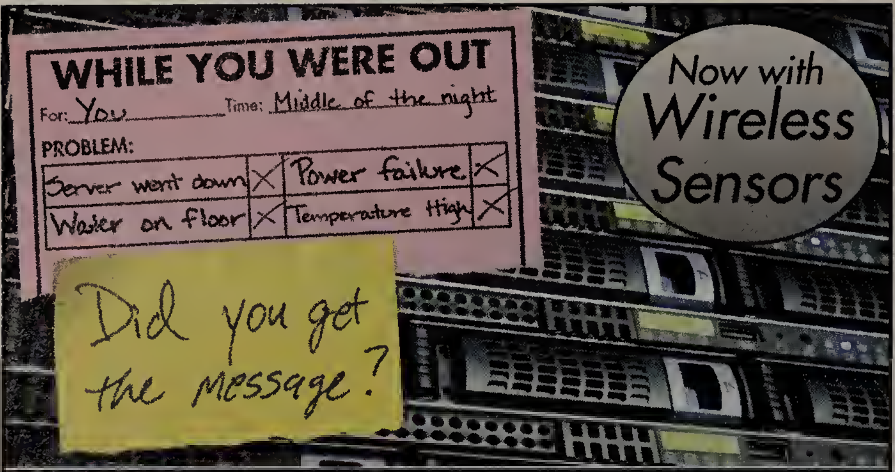
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BACKSPIN | BY MARK GIBBS

Good Enough IT: Better than Old Skool perfect

ARE YOU one of the Old Skool types to whom detail and quality really matter? Where you strive for (and maybe rave about) the need for standards and are appalled by sloppiness? Back when you wrote code, did you obsess about saving a byte or two? Did you put time and effort into bit-packing data so that things like configuration files could be loaded with a single read of a floppy disk drive?

While we all know those days are long, long gone (today you might, I say "might," worry about wasting a megabyte, but a bit? Pah!), those old habits that led you to strive for a certain level of perfection may no longer be the best choice.

Nope, for IT in the real world of today and in common with many other disciplines, Good Enough is, indeed, good enough.

In fact I'd suggest that Good Enough is the stuff survival is made of. It turns out that Good Enough is a law of evolution whether the environment you're looking at is biological, technical, social or whatever, because the goal is to survive in a "niche" — a given set of conditions and constraints. Where a high level of perfection was once required, today too "perfect" a fit and you won't be capable of change when your niche changes . . . as it surely will.

When many of us got into the IT business the niche was very specialized and we had to be exact, and as a consequence what we now expect and want is still that: things done the right way. It's kind of like we're trying to make bespoke tailored suits in a world that wants off-the-shelf, loose-fitting sweats.

Standards in IT are a great example of how great detail and specificity most often loses out to Good Enough. Where standards are very precise (for example, a fine worsted, three-piece with hand stitching, 44.5 chest, long jacket, 37 waist, 35.5 leg), there's still room for oversight and misinterpretation ("Oh! You wanted cuffs?"), which means we will still have to make accommodations ("Ack! We need more fabric to make cuffs. And a different pattern!"). The more complex the standards are, the more misinterpretation causes havoc when they are implemented. When standards are somewhat loose (as in sweat pants), implementations based on those standards will be more accommodating in the real world (they fit if you weigh 150 pounds or 250 pounds).

And this is not just a phenomenon of software and things digital, it applies to pretty much everything we do. A friend of mine (of Old Skool style persuasion) is doing business consulting with a company that makes a real world product and it drives him crazy that the people who own the company are so sloppy. The reality is that their sloppiness probably won't kill them as their competitors are also, to a greater or lesser degree, just as sloppy, and the niche they serve is in and of itself, also sloppy. All it takes is "good enough" and a little unpredictable luck and his company could win the market.

There are high costs associated with excellence — the cost of communicating, adopting, managing and maintaining, etc. — while the costs of "good enough" are usually significantly lower.

So, when you go back to wrestle with the IT beast in your organization take a moment to consider whether Old Skool perfection has a payoff that's as great as Good Enough. ■

Gibbs is pretty good in Ventura, Calif. Perfectly your thoughts to gearhead@gibbs.com.

NETBUZZ | BY PAUL MCNAMARA

Missing iPhone lawsuit magically disappears

IT WOULD seem the missing iPhone prototype wasn't "priceless," after all. Apple has apparently reached an out-of-court settlement to keep a San Francisco man from suing the company over what his attorney — and virtually everyone else — called an "outrageous" warrantless search of the man's home, car and computer last summer by two Apple employees accompanied by four city police officers.

Here's why I say "apparently reached." In early December, the man's then-talkative attorney, David Monroe, told CNET that settlement negotiations "have ended and we're moving forward" with a lawsuit that would be filed within a few weeks. Monroe was not shy about pressing his client's case to the press.

Having heard nothing more in four months, I called Monroe last week and asked if he could update me on the status of that lawsuit.

"I have no comment about that," he replied.

I asked if there had been a settlement between Apple and his client, Sergio Calderone.

"I have no comment about that."

I mentioned the bit about him saying in December that a lawsuit was then imminent — within a few weeks — and asked what had changed since then.

"I have no comment about that."

I was about to try a fourth round but by then we were both chuckling over the futility of the exercise.

So you tell me: Does this sound like an attorney whose client has accepted a settlement that carries the common stipulation that neither he nor his lawyer will blab about it? That's what I took from all those "no comments" and Monroe's bemused indulgence of my questioning, but I suppose there are other possible explanations.

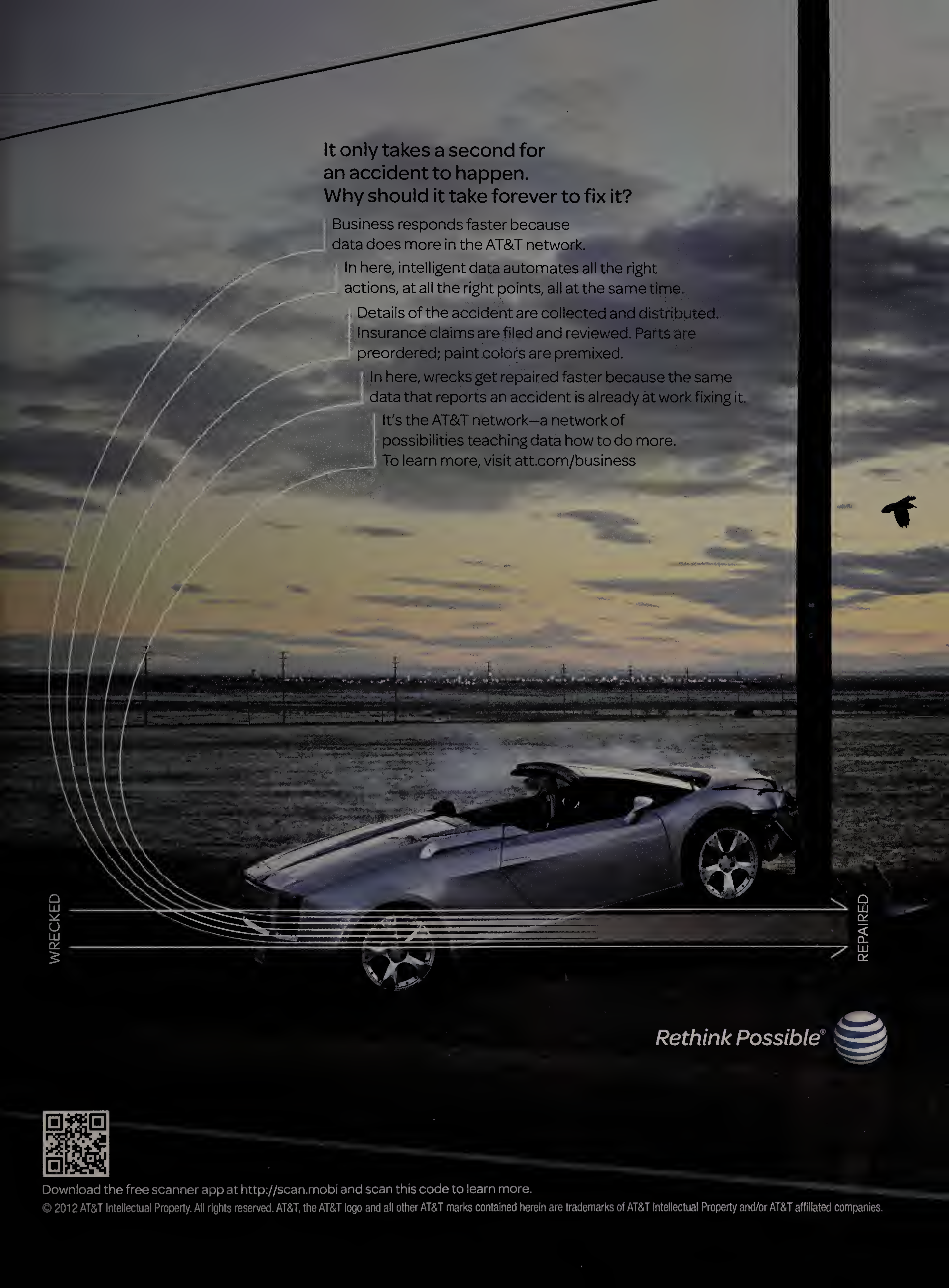
And Monroe's answer was exactly the one I had expected before making the call. After all, does anyone really think Apple wanted this dirty laundry flapping around in an open courtroom?

If you're new to the story, here's a quick summary: A prototype iPhone that Apple told police was "priceless" goes missing July 21-22 from a San Francisco watering hole; Apple traces it electronically to a home in the same city; two days later, six suits, at least one of whom allegedly identifies himself as a police officer, arrive at the homeowner's front door and ask to search the place; the resident, assuming that he's looking at a half-dozen cops — because that's what they wanted him to believe — admits to having been at the bar recently, denies having the phone, and acquiesces to the warrantless search; two of the suits — reportedly the Apple two — enter the home and find nothing.

Remember, this was the second iPhone prototype to go missing from a bar. When this second such story was first reported by CNET, based solely on one unnamed source, it was considered so preposterous that some people suspected the tale to be an Apple-orchestrated publicity stunt. That talk ended when the police finally copped to being in on the caper and the target of the search told his account, then hired a lawyer, Monroe. Who once had plenty to say but is now no longer talking.

As for Apple, the company has yet to utter word one throughout this entire episode, so it is no surprise that I've yet to hear from them regarding my latest inquiry. ■

Have an actual comment? Send it to buzz@nww.com.



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